

Report

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PRELIMINARY GEOCHEMICAL SURVEY  
ECHO & TOE CLAIM GROUPS  
TOMMY-BOOT LAKE AREA, NICOLA M.C.  
49°, 120° S.E.

by W.M. Sharp, P.Eng., for  
CONSOLIDATED SKEENA MINES LTD. (N.P.L.)  
Vancouver, B. C.

Field Surveys: July, 1966 - August, 1967.

*report date - AUG 31, 1967*

801091

WILLIAM M. SHARP, P. ENG.  
CONSULTING GEOLOGICAL ENGINEER

STE. 808, 900 WEST HASTINGS ST.  
VANCOUVER 1, B. C.

August 31, 1967

President and Directors,  
Consolidated Skeena Mines Ltd. (N.P.L.),  
716 - 602 West Hastings Street,  
Vancouver 2, B.C.

Attention: Mr. F.A. McGonigle, President

Gentlemen:

This report has been compiled for submission to the Mining Recorder, Nicola Mining Division, by Mr. John White to substantiate his application for credit on that part of the total Echo-Toe groups assessment work performed via geochemical surveys.

This report post-dates my earlier general report of April 28, 1967, "Geology and Exploration of the Canford and Tommy Lake Properties, Nicola M.D., B.C." which contained a summary and interpretation of the geochemical survey data obtained up to that time. The additional field work subsequently accomplished, and covered by this report, largely results from my April 28th recommendations.

Respectfully submitted,

W.M. Sharp, P.Eng.

Encls.

**REPORT**

**PRELIMINARY GEOCHEMICAL SURVEY**

**of the**

**ECHO AND TOE CLAIM GROUPS**

**In the**

**TOMMY LAKE - BOOT LAKE AREAS,**

**NICOLA MINING DIVISION, B. C.**

**49°, 120°, S.E.**

**Aug. 31, 1967.**

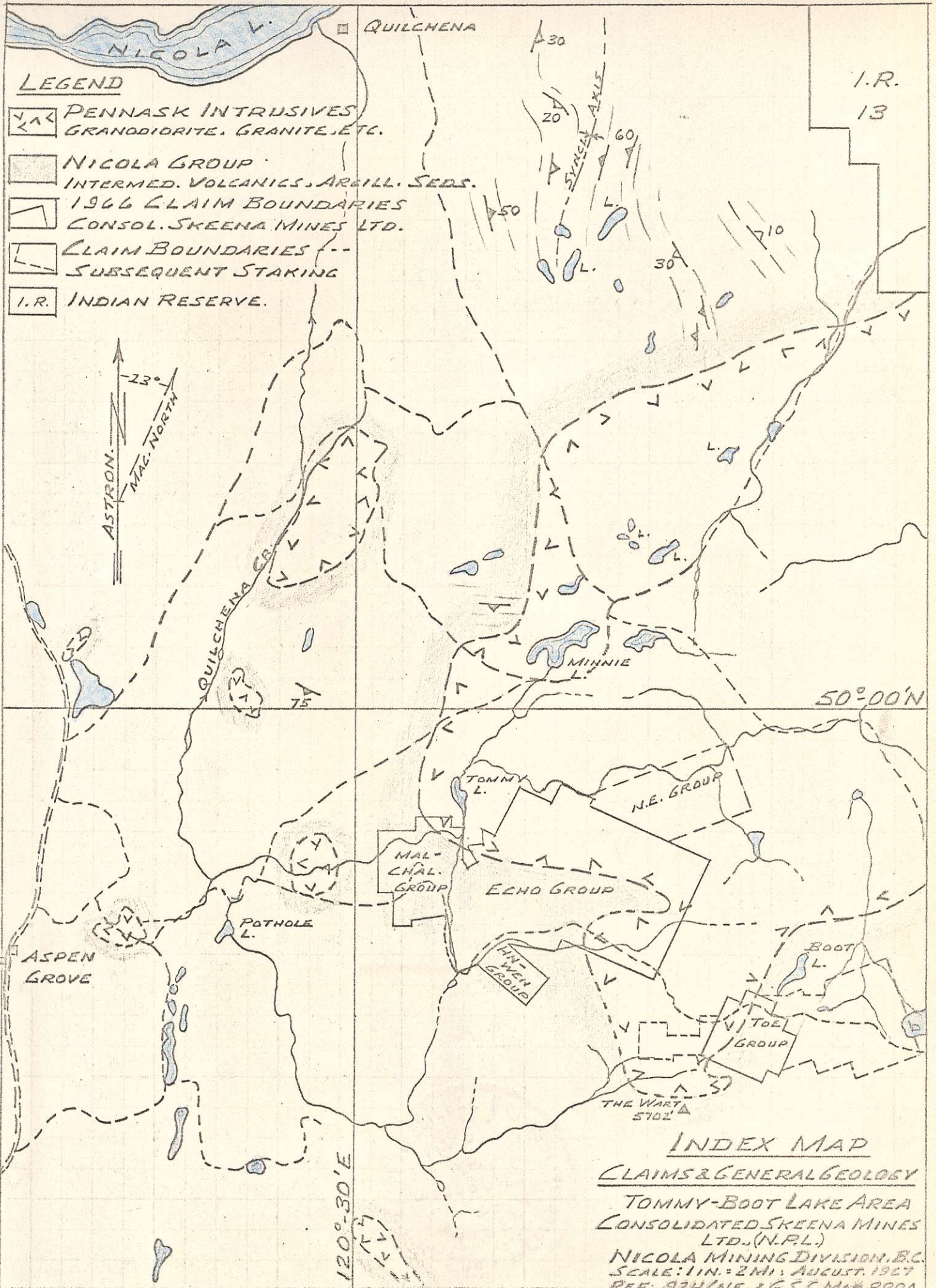
**W.M. Sharp, P.Eng., Consulting Geological Engineer**

**for**

**CONSOLIDATED SKEENA MINES LTD. (N.P.L.)**

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<u>REPORT DRAWINGS</u>	
1. <u>Bound with Text:</u>	
(a) Index Map, Claims and General Geology, Tommy-Boot Lake Area; Scale, 1 inch = 2 miles.	
(b) Preliminary Geochemical survey, Toe Group, Boot Lake Area; Scale, 1 inch = 1000 feet.	
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Preliminary Geochemical Survey, Consolidated Skeena Mines Ltd. (N.P. L.), Upper Quilchena Creek Groups, Scale 1 inch = 1,000 feet.	



**INDEX MAP**  
**CLAIMS & GENERAL GEOLOGY**  
 TOMMY-BOOT LAKE AREA  
 CONSOLIDATED SKEENA MINES LTD. (N.P.L.)  
 NICOLA MINING DIVISION, B.C.  
 SCALE: 1 IN. = 2 MI., AUGUST, 1967  
 REF: 92H/NE & G.S. MAP 888A  
 W. M. SHARP, P. ENG.

## INTRODUCTION

With this report, the writer describes the field and laboratory procedures pertaining to the currently-completed part of the preliminary geochemical survey being carried out over the extensive Echo, Toe and subsequently-staked and subsidiary claim groups held by Consolidated Skeena Mines Ltd. (N.P.L.), in the general Tommy - Boot Lakes area of the Nicola Mining Division.

At the time of writing the preliminary survey has not been completed to the point where results can be conclusively assessed and compared, and the final or optimum areas selected for follow-up detailed geochemical, magnetometer, etc. exploration. However, in areas where the current preliminary program has already indicated significant geochemically-anomalous zones, the writer makes some preliminary recommendations regarding follow-up detailed exploration.

This report is based, primarily, on data accruing from Mr. J.E. White's field work - this having been presented via a series of informative progress maps and reports. It is also based on field work performed by A. Boettger for the Company during July-September, 1966; this part of the field work is being checked and extended by Mr. White. The writer's afore-mentioned April 28, 1966 report has been used as a reference for descriptions of the Company's properties, location and access, geology, initial geochemical survey data, and preliminary summary and recommendations.

## PROPERTY

### (a) Location and Access:

The position, extent, and access to the claim groups is shown on the accompanying 1 inch = 2 mile index map. The individual claims comprising the currently-surveyed extent of the Echo, Toe and contiguous claims are shown on the two accompanying 1000-scale maps.

The Echo group is situated closely south and east of Tommy Lake, and approximately 8 miles due east of the village of Aspen Grove and the Princeton-Merritt highway. The Toe group lies about 1 1/2 miles southeast of the Echo group.

Local access is via 10 - 14 miles of main logging road - forest access road, with branch roads and trails. The road is passable to 4-wheel drive vehicles only during the winter and fall months.

(b) Claims:

The present extent of the Echo group is shown on Drawing No. 3-R0. This also includes details of the geochemical survey and of the claims so far explored by the 1966-67 reconnaissance (locally detailed) geochemical phase of the continuing program. The second 1000-scale map, "Preliminary Geochemical Survey, Toe Group", provides the corresponding detail pertaining to the Toe group.

The sub-groups, on which a portion of the total exploration has been accomplished, are outlined in blue, yellow, and green respectively; these correspond to Mr. J.E. White's current grouping. The total Echo claim block, as staked during 1966, comprises 105 full and fractional claims.

The initial Toe group, comprising Toe #1 - #23, inclusive, was staked during October, 1966 on the basis of preliminary (rubeanic) results accruing from reconnaissance soil-sampling in this area during July-September, 1966. The group was expanded to its present size (68 claims) to include geophysically-anomalous areas indicated by an airborne survey; it was also extended to partly cover geological-geochemical trends indicated by subsequent field exploration.





**(B) TRENCHING & STRIPPING, July-August, 1967:**

<b>Salaries and wages</b>	<b>345.42</b>
	<b>200.00</b>
	<b>254.52</b>

**Bulldozer Rentals:**

<b>D8 Cat, 20 hrs. @ \$26.00</b>	<b>520.00</b>	
<b>TD 25-B, 40 hrs. @ \$28.50</b>	<b>1,140.00</b>	
<b>" , 65 hrs. @ 28.50</b>	<b><u>1,852.50</u></b>	<b><u>\$ 4,312.44</u></b>

**Total, Exploration, (A) plus (B) - \$ 8,832.32**

*as per copies  
submitted } sign  
& seal*

## GEOLOGY

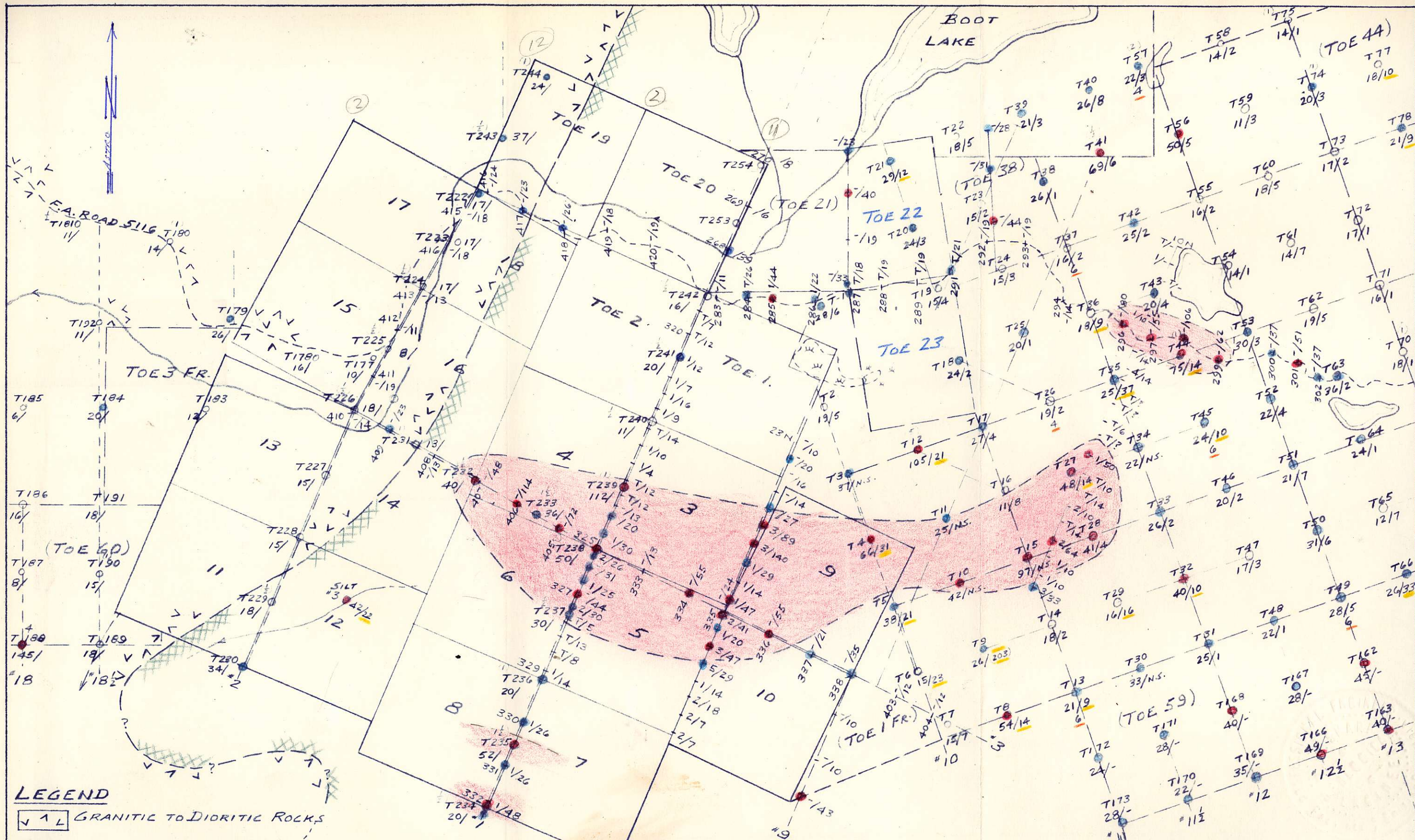
Both the Echo and Toe groups are situated closely north of a major E-W trending embayment of Nicola group rocks between the Princeton and Pennask granodiorite batholiths. Within some areas of this embayment the Nicola volcanic-sedimentary assemblages have been strongly warped and sheared along trends which are notably divergent to the general northerly formational trends of the region. These occur both near and distant to the major intrusive contacts. Such deformed "panels" appear to provide optimum structural-lithological conditions for occurrences of the district Cu-Mo mineralization, such as occur within the Brenda Lake area; they also appear functional in localizing the Au-Ag-Pb-Zn mineralization within the much smaller vein and shear structures of the upper Siwash Creek area.

The south contact of the Pennask intrusive trends easterly to southerly, respectively, across the Echo claim group. Between the Echo and Toe groups the intrusive bulges southerly - perhaps terminating at the inferred "Wart" lineament. The westerly-situated Toe 60-65 claims generally straddle this bulge; the balance of the group is underlain by Nicola andesitic tuffs which, in turn, are locally dioritized and/or intruded by irregular masses of dioritic intrusive material. Minor occurrences of magnetite-chalcopyrite mineralization have been noted in, or close to these dioritic facies; more significant occurrences may occur within similar, but drift-covered zones, or within the general zone of the above-noted intrusive prong. Numerous minor occurrences of fracture-filling pyrite-chalcopyrite mineralization have been noted within outcropping and/or stripped areas of intrusive and volcanic rocks underlying the Echo group. The geochemical survey was instigated to assist in the search for significant occurrences of this mineralization.

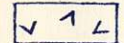

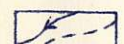
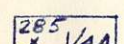
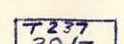

## GEOCHEMICAL SURVEY

### 1. Grid Preparation:

The control grids established on the Echo and Toe claim groups are shown on the accompanying 1000-scale maps. For the current purpose of completing a preliminary reconnaissance survey, prior to ordering detailed coverage of specifically-indicated areas, the control lines follow existing claim lines and extensions, or systematic departures from these. Grid-lines are blazed and flagged, sample stations are flagged or picketed, and are identified as such at these points. Within the Echo group, stationing on "N-S" lines was generally at 500-foot intervals, and on "E-W" lines at 500 and/or 200-foot intervals.



**LEGEND**

-  GRANITIC TO DIORITIC ROCKS
-  PREDOM. INTERMED. VOLCANICS; MINOR ARGILLACEOUS SEDIMENTS.
-  STREAMS
-  ROADS & TRAILS.
-  1966 GEOCHEM. DATA: RUBEANIC SPOT; GRADE 1 TO 5 / TOTAL CU, P.P.M.
-  1967 GEOCHEM. DATA: TOTAL CU, P.P.M. TOTAL HG, P.P.B. (TOTAL MO. P.P.M. > 3)

1966 Burn Table 101 @ 1.20 = 121.20  
 1967 Ravinger 27 @ 0.100 = 27.00  
 27 @ 2.50 = 67.50  
 20 @ 2.00 = 40.00  
 134.50

- PRELIM. BACKGROUND; 0-19 P.P.M. CU
- " THRESHOLD; 20-39 " "
- " ANOMALOUS; 40-PLUS " "

CONSOLIDATED SKEENA MINES, LTD.  
**PRELIMINARY GEOCHEMICAL SURVEY**  
 TOE GROUP, BOOT LAKE AREA  
 NICOLA MINING DIVISION, B.C.  
 SCALE: 1"=1000' DRAWN AUG. 1967.  
 REFS: A. BOETTGER, 1966  
 J.E. WHITE, 1967.  
 W.M. SHARP, P. ENG.

## 2. Soil-Sampling and Analyses:

The respective field procedures were demonstrated by the writer prior to the commencement of the 1966 field work.

On the preliminary, 1966 program only the "B" soil-horizon was sampled. This involved the excavation of 6" - 12" deep pits, using a standard prospect pick and/or small spade. Through 1967, a change of analytical procedures necessitated the taking of separate samples, at each station, from both the normal "B", and the deeper "C" soil horizons; thus, pit depths range from 6 inches to a maximum of about 3 feet.

During 1966, the analysis of the B-zone samples consisted of a preliminary field test for Cu by the rubeanic-spot method; on the basis of the rubeanic indications, approximately one-half of the total number of field samples taken was submitted to the Bio Metals Corp. laboratory for determination of parts per million (p.p.m.) total Cu via analyses employing hot acid extraction - atomic-absorption techniques. An aggregate of about 300 samples was laboratory-analyzed for p.p.m. copper and, in specific sets, for p.p.m. Mo.

With the wider range of precise geochemical analyses offered by the Barringer Research organization, in conjunction with their provision of a convenient receiving depot in Vancouver, the writer specified that the 1967 geochemical exploration program include the determination of Cu/Mo via B-zone sampling, and that of Hg - for detection of possible hydrothermal-mercury halos - via C-zone sampling. To date, this composite geochemical procedure has been performed - on a 750' x 750' reconnaissance spacing only - over the Toe claims. The procedure is being continued over the Echo group.

All samples are currently prepared for the laboratory by air-drying, then screening through non-contaminating 80-mesh sample nylon screens. A "split" of the -80 mesh sample material is reserved by the field staff for subsequent check analyses and/or determinations of other elements, if indicated by more comprehensive laboratory tests.

Barringer Research employs the modern hot-acid (gen. HCl) extraction - atomic absorption process for the determination of all Cu's and most Mo's; however Mo may be determined colorometrically if preliminary laboratory tests show this to be the optimum method for certain compositional types of soil. This organization determines Hg in parts per billion (p.p.b.) by measuring the absorption

of the 2537 Angstrom mercury emission line when passed through the vapour given off by the heated soil-sample. Their multiple-channel equipment specifically enables a differential comparison of the effect produced by both mercury and organic material - in the event the latter is present in possible anomalous proportions.

For purposes of the current reconnaissance survey the results are evaluated:

Background	@ $\frac{0\text{-trace}}{5 \text{ max.}}$ rubeanic;	0-19 p.p.m. total Cu
Threshold	@ $\frac{1}{5 \text{ max.}}$ rubeanic;	20-39 p.p.m. total Cu
Anomalous	@ $\frac{2 - 5}{5 \text{ max.}}$ rubeanic;	40 - plus p.p.m. total Cu
Anomalous Mo @ 3- plus p.p.m.		
Anomalous Hg @ 10- plus p.p.b.		

#### INTERPRETATIONS OF PRELIMINARY GEOCHEMICAL DATA

This has already been done where required to generally direct field exploration in certain areas and, locally, to suggest additional staking; these preliminary interpretations have been forwarded verbally and by letter.

The following represents an interpretation of the total data accumulated to date.

#### A. ECHO GROUP

The currently-inferred anomalous areas lie within the larger orange-pencilled blocks shown on Drawing 3-R0.

1. E57 - E21 area straddles the granodiorite-volcanic contact for an E.S.E. strike-distance of roughly 7,000 feet. This apparent weakly-anomalous area has been delineated almost entirely by rubeanic ("cold-soluble copper") determinations; these range from 1 to 3 in rubeanic-spot colouration. Background is of 0 to trace

intensity. This is considered a tentatively-anomalous area - pending confirmation by 750' x 750' grid sampling and laboratory determinations of total Cu in the resulting samples.

2. E33 - E43 area also appears to lie within the same general intrusive-volcanic contact area, but further to the east-southeast. This anomaly is highly tentative, in that it has been entirely delineated by rubenic field-testing.

3. A minor anomaly is indicated, by both rubenic and total Cu determinations, over S.W. Echo 75 and S.E. Echo 78.

4. An anomalous area in the northerly halves of HN 3-4 claims. This is suggested by the coincidence of rubenic and total-copper values. This may extent north-easterly to join a fair rubenic anomaly in the E-1, 2, 3, 4 claim area.

#### B. TOE GROUP

A significant copper anomaly extends eastward of the westerly junction of Toe 4 and 6 claims for a distance of some 7000 feet; this zone has an apparent width ranging from 700 to 1800 feet. Over this area the significant total-Cu concentrations range from 20 to a maximum 140 p.p.m. - the average, excluding intermediate "threshold" concentrations, being about 66 p.p.m. against an average Cu background of 12 p.p.m.. In addition, the corresponding rubenic determinations scale at 1-3 colour intensity.

An interesting, and perhaps significant feature accompanying the Cu anomaly is the apparent Hg halo about its easterly end. Although insufficient sampling has been done to establish the continuity and shape of this mercury halo, it could indicate the presence of primary (hydrothermal) mineralization within the underlying bedrock sections.

Other developing anomalous zones are suggested within, and bordering the currently-explored extent of the Toe grid.

## SUMMARY AND RECOMMENDATIONS

To date, the preliminary exploration of the Echo group has been unsuccessful in delineating any really significant geochemically-anomalous areas. However, in view of the general unreliability of the soil-sampling accomplished prior to Mr. White's period of supervision, the writer considers that the preliminary Echo geochemical data are correspondingly unreliable. Therefore, the principal recommendations, with respect to geochemical exploration of the Echo and adjoining Company-owned claims, is for an adequate field and laboratory check of the initial work, with concurrent extensions of the geochemical program over the unexplored balance of the group, or of extensions of more positively-indicated anomalous areas.

The above should be followed up via detailed geochemical, and applicable geophysical exploration before planning costly physical exploration.

With respect to the Toe group, the writer recommends the completion of the current geochemical reconnaissance. Following this, broadly, or inconclusively-anomalous areas may be more completely delineated by detailed geochemical exploration. Resulting anomalous zones may be additionally explored by appropriate geophysical-physical exploration procedures.

Respectfully submitted,

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W.M. Sharp, P.Eng.

Bound in Aug 31/67 geochem report, Consol. Sheena Echo - Tol, dated Aug 31/67

DOMINION OF CANADA:  
 PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of the current application

for acceptance of preliminary geochemical exploration as credit towards the annual assessment work due on the Echo group, and with reference to "Mineral Act, Chapter 244, Revised Statutes of B.C., 1960:

I,

William M. Sharps, P. Eng.

of # 808-900 West Hastings Street, Vancouver, B.C.

in the Province of British Columbia, do solemnly declare that

I am a Consulting Geological Engineer retained by Consolidated Sheena Mines Ltd., (N.P.L.), and that under my supervision a geochemical soil-sampling survey was carried out on the following mineral claims held by Consolidated Sheena Mines Ltd. in the Nicola Mining Division:

Echo # 1-36 M.C's	Record No's 31965-32000 incl.
Echo # 37-60 "	" " 32001 - 32024 "
Echo # 61-70 "	" " 32377 - 32386 "
Echo # 71-82 "	" " 32544 - 32555 "
Echo # 83-94 "	" " 32690 - 32701 "
Echo # 95 "	" " 32854 "
Echo # 96-102 "	" " 32855 - 32861 "
Echo # 1-3 Fr. M.C's.	" " 32851 - 32853 "

A total of \$3757.38 was <sup>directly</sup> expended in regard to such surveys, and report thereon dated August 31, 1967, as shown:

Salaries & Wages	2963.85
Geochemical supplies	86.25
Crew food & lodging	396.48
Laboratory analyses	310.80
<b>Total</b>	<b>\$3757.38</b>

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of

the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the

of \_\_\_\_\_, in the

Province of British Columbia, this

day of \_\_\_\_\_, A.D.

A Commissioner for taking Affidavits for British Columbia or  
 A Notary Public in and for the Province of British Columbia.

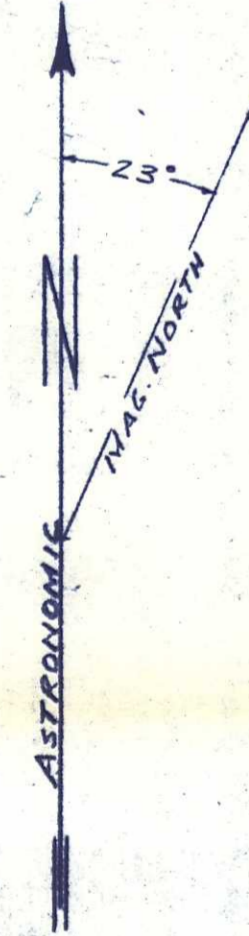
\* plus indirect expense:  
 Truck rentals & operation --- \$412.50  
 Geological Consulting Fees --- 350.00 \$762.50



DETAIL OF ECHO 93 SOIL SAMPLING  
 1" = 200'  
 ORIGINAL TRAVERSE BY A. BOETTGER  
 CHECK " " J.E. WHITE

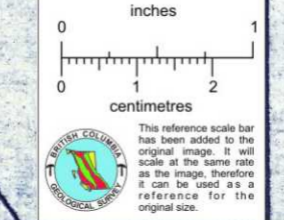


**CLAIM GROUPING**  
 BLUE - WEST GROUP  
 YELLOW - CENTRE  
 GREEN - EAST  
 PROPOSED FOLLOW-UP, DETAILED GEOCHEMICAL SURVEYS



WART GROUP  
 (A.P. GEOCH. RESULTS?)

TO ACCOMPANY GEOCHEMICAL SURVEY REPORT BY  
 W. H. SHARP, P. ENG. ON THE ECHO & TOE CLAIM  
 GROUPS IN THE TOMMY L. - BOOT L. AREA,  
 NICOLA M.P., DATED AUG. 31, 1967.  
 W. H. SHARP, P. ENG.



PROPERTY: CONSOLIDATED SKEENA MINES LTD. (N.P.L.)  
 UPPER QUILCHENA CREEK GROUPS, NICOLA MINING DIVISION

TITLE: PRELIMINARY GEOCHEMICAL SURVEY

TOE 63	TOE 62	TOE 65	TOE 64
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LEGEND:

- GRANITIC TO DIORITIC ROCKS
- NICOLA GROUP VOLCANICS, ETC.
- STREAMS, ROADS & TRAILS
- CHALCOPRITE, M.C.S. (M.C.S. = MANGANESE)
- SOIL SAMPLE STA.
- RUBENIC SPOTS (SCALE 1:200)
- MINOR ANOMALY RE. CU
- SIGNIFICANT ANOMALY RE. CU
- TRACE RUBENIC SPOT COORDINATION
- NO SAMPLE
- OPEN CUT OR TEST PIT
- SUBSIDING CUT OR DRAINAGE NOT FULLY RECENT
- SWAMP

SCALE: 1" = 1000 FT. DATE: AUGUST, 1967. DRAWN BY: W.H.S. & J.E.W. CHECKED BY: J.E.W. & W.H.S.